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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/533,591	03/23/2000	Jung Chuan Chou	H000010	1107

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Intellectual Property Solutions PLLC
1300 Pennsylvania Avenue NW
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EXAMINER

ORTIZ, EDGARDO

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 12/10/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/533,591

Applicant(s)
Chou Et.al.

Examiner
Edgardo Ortiz

Art Unit
2815



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Nov 2, 2001
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☒ All b) ☐ Some* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 20) ☐ Other: _____

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DETAILED ACTION

This Office Action is in response to an election filed November 2, 2001 on which Applicant elected Group I (Claims 1-11) to be prosecuted.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Covington et.al. (U.S. Patent No. 4,502,938) in view of Gardner et.al. (U.S. Patent No. 6,121,094). With regard to Claim 1, Covington teaches a semiconductor substrate (3), a gate oxide layer (6) on the semiconductor substrate, an ion-selective membrane layer overlying the gate oxide layer, a source/drain (1, 2) in the semiconductor substrate beside the ion-selective membrane layer, a metal wire on the source/drain and a sealing layer (11) overlying the metal wire and exposing the ion-selective membrane layer.

However, Covington fails to teach a tungsten oxide layer which overlies the gate oxide layer in the gate structure. Gardner teaches a multi-level gate structure including a gate oxide layer (18) with an overlying tungsten oxide layer (32). Therefore, it would have been an obvious

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modification to someone with ordinary skill in the art, at the time of the invention, to modify the Covington structure to include a tungsten oxide layer which overlies the gate oxide layer in the gate structure, as taught by Gardner, in order to allow metal conductor layers to adhere properly to underlying process layers and reduce delamination.

With regard to Claim 2, a further difference between the claimed invention and the teachings of Covington and Gardner is, the length, width and width/length ratio of the channel region. It would have been an obvious modification at the time of the invention, to modify the structure as taught by Covington and Gardner to include the claimed dimensions, in order to provide a channel region which reduces the source-to-drain capacitance.

With regard to Claim 3, a further difference between the claimed invention and the teachings of Covington and Gardner is, a semiconductor substrate being P-type. It would have been an obvious modification at the time of the invention, to modify the structure as taught by Covington and Gardner to include a semiconductor substrate being P-type, since it is a well-known practice in the art to provide a semiconductor substrate with a specific polarity depending on its use or function.

With regard to Claim 4, a further difference between the claimed invention and the teachings of Covington and Gardner is, a semiconductor substrate having a resistivity of 8 to 12 ohms-cm. It

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would have been an obvious modification at the time of the invention, to modify the structure as taught by Covington and Gardner to include a semiconductor substrate having a resistivity of 8 to 12 ohms-cm, based on the dopant and the polarity of the material used for the semiconductor substrate.

With regard to Claim 5, Covington teaches a semiconductor with a lattice parameter of (1,0,0).

With regard to Claim 6, Covington fails to teach a gate oxide having a thickness of about 1000Å. Gardner teaches a gate oxide having a thickness of about 1000Å. Therefore, it would have been an obvious modification at the time of the invention, to modify the structure as taught by Covington to include a gate oxide having a thickness of about 1000Å, as taught by Gardner, in order to provide a proper gate oxide based on the dielectric constant of the metal oxide used in the gate structure.

With regard to Claim 7, Covington fails to teach a thickness of a tungsten oxide layer that is at least 1000Å. Gardner teaches a tungsten oxide layer that has a thickness which is variable depending on the specific application. Therefore, it would have been an obvious modification at the time of the invention, to modify the structure as taught by Covington to include a tungsten oxide layer that is at least 1000Å, as taught by Gardner, in order to provide a tungsten oxide layer with the thickness required depending on a specific application.

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With regard to Claim 8, Covington teaches a metal wire consisting of Al.

With regard to Claim 9, Covington teaches a sealing layer consisting of epoxide resin.

With regard to Claim 10, a further difference between the claimed invention and the teachings of Covington and Gardner is, a source/drain being N-type. It would have been an obvious modification at the time of the invention, to modify the structure as taught by Covington and Gardner to include a source/drain being N-type, since it is a well-known practice in the art to provide a source/drain with a specific polarity depending on its use or function.

With regard to Claim 11, a further difference between the claimed invention and the teachings of Covington and Gardner is, N-type impurities consisting of phosphorous. It would have been an obvious modification at the time of the invention, to modify the structure as taught by Covington and Gardner to include N-type impurities consisting of phosphorous, since it is a well-known practice in the art to provide a source/drain with a Group-V dopant in order to provide an N-type active region.

Conclusion

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Edgardo Ortiz (Art Unit 2815), whose telephone number is (703)

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308-6183. In case the Examiner can not be reached, you might call Supervisor Eddie Lee at (703)

308-1690. Any inquiry of a general nature or relating to the status of this application should be directed to the Group 2800 receptionist whose telephone number is (703) 308-0956.

EO/AU 2815

12/3/01

A handwritten signature in black ink, appearing to read 'Eddie Lee', with a stylized, flowing script.

EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800